## AMENDMENTS TO THE SPECIFICATION

Please amend paragraph 0036 of published application US20040169966 [*i.e.*, paragraph [20] (p. 5) under the "Brief Description of Drawings" of this application Serial No. 10/792,078 (as filed March 3, 2004)] as follows:

> [0036] ~~Figure 3 shows~~ Figures 3a–3d show electric-pop test results before and after MR and SAL are connected by microfabrication,

A clean copy of amended paragraph 0036 is as follows:

> [0036] Figures 3a–3d show electric-pop test results before and after MR and SAL are connected by microfabrication,

Also, please amend paragraph 0037 of published application US20040169966 [*i.e.*, paragraph [21] (p. 5) under the "Brief Description of Drawings" of this application Serial No. 10/792,078 (as filed March 3, 2004)] as follows:

> [0037] ~~Figure 4 shows~~ Figures 4a–4b show an extension to prevent a GMR device from electric-pop noise due to discharge between the GMR device and shields.

A clean copy of amended paragraph 0037 is as follows:

> [0037] Figures 4a–4b show an extension to prevent a GMR device from electric-pop noise due to discharge between the GMR device and shields.

Also, please amend paragraph 0039 of published application US20040169966 [*i.e.*, paragraph [23] (p. 5) under the "Brief Description of Drawings" of this application Serial No. 10/792,078 (as filed March 3, 2004)] as follows:

[0039] Figure 1a is a diagram of a first preferred embodiment of the invention. As shown in this figure, MR layer 10 and SAL 30 are separated by a thin insulated spacer layer 20, and are electrically connected at the ends of the MR element. An active region 10 of the MR device could be either a NiFe film or a composite layer, such as TaN/NiFe/TaN. NiFe, thickness ranges from 50 to 400 Å. Side regions 12 and 14 of the MR element make electric contact with longitudinal bias layer and lead layer stacks 40 and 42. End regions 16 and 18 of the MR element are connected to the end regions 32, 34 of SAL by ~~leads~~ the lead and longitudinal bias layer stacks 40 and 42. The length of MR element and SAL ranges from 2 to 20 μm. Insulating spacing layer 20 is made of insulating materials, such as $A1_2O_3$, AlON and $SiO_2$, and the typical thickness of insulating spacing layer 20 varies from 50 to 200 Å. Soft-adjacent layer (SAL) 30 can be made of NiFe, NiFeCr, NiFeRh. The moment ratio of SAL 30 to MR layer 10 ranges from 0.6 to 1.0.

A clean copy of amended paragraph 0039 is as follows:

[0039] Figure 1a is a diagram of a first preferred embodiment of the invention. As shown in this figure, MR layer 10 and SAL 30 are separated by a thin insulated spacer layer 20, and are electrically connected at the ends of the MR element. An active region 10 of the MR device could be either a NiFe film or a composite layer, such as TaN/NiFe/TaN. NiFe, thickness ranges from 50 to 400 Å. Side regions 12 and 14 of the MR element make electric contact with longitudinal bias layer and lead layer stacks 40 and 42. End regions 16 and 18 of the MR element are connected to the end regions 32, 34 of SAL by the lead and longitudinal bias layer stacks 40 and 42. The length of MR element and SAL ranges from 2 to 20 μm. Insulating spacing layer 20 is made of insulating materials, such as $A1_2O_3$, AlON and $SiO_2$, and the typical thickness of insulating spacing layer 20 varies from 50 to 200 Å. Soft-adjacent layer (SAL) 30 can be made of NiFe, NiFeCr, NiFeRh. The moment ratio of SAL 30 to MR layer 10 ranges from 0.6 to 1.0.

Also, please amend paragraph 0040 of published application US20040169966 [*i.e.*, paragraph [24] (pp. 5–6) under the "Brief Description of Drawings" of this application Serial No. 10/792,078 (as filed March 3, 2004)] as follows:

> [0040] In Figure la, longitudinal bias layer ~~40~~ can be made of anti-ferromagnetic materials, such as NiMn, FeMn, PtPdMn, IrMn and PtMn. Lead layer ~~42~~ can be made of Ta, W or Ta/Au/Ta. Longitudinal bias layer ~~40~~ and lead layer ~~42~~ extend coverage on top of the MR element 10 and electrically contact with MR element 10 through side regions 12 and 14, respectively. Therefore, the electric track width of the MR element is defined by active region 10 as longitudinal bias layer ~~40~~ and lead layer ~~42~~ have much higher electric conductivity than the MR layer.

A clean copy of amended paragraph 0040 is as follows:

> [0040] In Figure la, longitudinal bias layer can be made of anti-ferromagnetic materials, such as NiMn, FeMn, PtPdMn, IrMn and PtMn. Lead layer can be made of Ta, W or Ta/Au/Ta. Longitudinal bias layer and lead layer extend coverage on top of the MR element 10 and electrically contact with MR element 10 through side regions 12 and 14, respectively. Therefore, the electric track width of the MR element is defined by active region 10 as longitudinal bias layer and lead layer have much higher electric conductivity than the MR layer.

Also, please amend paragraph 0041 of published application US20040169966 [*i.e.*, paragraph [25] (p. 6) under the "Brief Description of Drawings" of this application Serial No. 10/792,078 (as filed March 3, 2004)] as follows:

> [0041] On the other hand, longitudinal bias layer ~~40~~ and lead layer ~~42~~ electrically contact with SAL layer 30 through side surfaces 32 and 34, respectively. Therefore, the electric track width of the SAL element is the entire element width.

A clean copy of amended paragraph 0041 is as follows:

> [0041] On the other hand, longitudinal bias layer and lead layer electrically contact with SAL layer 30 through side surfaces 32 and 34, respectively. Therefore, the electric track width of the SAL element is the entire element width.

Also, please amend paragraph 0049 of published application US20040169966 [*i.e.*, paragraph [33] (p. 7) under the "Brief Description of Drawings" of this application Serial No. 10/792,078 (as filed March 3, 2004)] as follows:

> [0049] In Figures 4a and 4b, reference numeral 60 designates a GMR active device, the GMR device including a spin-valve, GMR multilayer, and spin-dependent tunneling device, and numerals 62 and 64 designate stacks having a longitudinal bias layer and a lead layer~~, respectively~~. Electric contact 66 is provided between one side of lead layer ~~64~~ and ~~of~~ longitudinal bias layer stack 62 and the bottom shield 70. Bottom and top shields 70 and 80 are made of soft magnetic materials, such as NiFe. Gaps 72 and 74 are filled with electrically insulating materials, such as $Al_2O_3$, AlNO, AlN, and vary from 250 Å to 2000 Å in thickness. Electric contact 68 is provided between one side of lead layer ~~64~~ and ~~of~~ longitudinal bias layer stack 64 and top shield 80.

A clean copy of amended paragraph 0049 is as follows:

> [0049] In Figures 4a and 4b, reference numeral 60 designates a GMR active device, the GMR device including a spin-valve, GMR multilayer, and spin-dependent tunneling device, and numerals 62 and 64 designate stacks having a longitudinal bias layer and a lead layer. Electric contact 66 is provided between one side of lead layer and longitudinal bias layer stack 62 and the bottom shield 70. Bottom and top shields 70 and 80 are made of soft magnetic materials, such as NiFe. Gaps 72 and 74 are filled with electrically insulating materials, such as $Al_2O_3$, AlNO, AlN, and vary from 250 Å to 2000 Å in thickness. Electric contact 68 is provided between one side of lead layer and longitudinal bias layer stack 64 and top shield 80.